

William Riley, Editor

Department of Physics
The Ohio State University
Columbus, Ohio 43210

Volta and Electricity. Production, script, narration, and editing by Samuel Devons of the Barnard-Columbia History of Physics Laboratory. Photography and associated technical matters by Anthony J. Zaza of the Film Division of the School of the Arts, Columbia University. (Present address: Hunter College, New York, NY. This film partially fulfilled the requirements for his M.A. degree.) Produced with the help of a grant from the Sloan Foundation. Distribution: History of Physics Laboratory, Barnard College, Columbia University, New York, NY 10027. 16 mm, color, sound, 33 min. Price: \$225 + postage. (Reviewed by Judith Bregman.)

Volta and Electricity is a fine film. It is doubly to be welcomed—for itself and because it is a first film from new film makers. It was made with the use of the resources of the History of Physics Laboratory that Samuel Devons and his associates have developed. In that laboratory, important experiments in the development of physics are studied in their historical context; instruments and methods used follow closely the original descriptions [S. Devons and L. Hartman, *Phys. Today* **23**, 44 (1970)].

The film treats the research of one man, Alessandro Volta, into electricity in a similar fashion. Investigations which were significant in the growth of Volta's ideas are shown with ingenuity and humor. The place of the experiments historically and their revolutionary effect upon our understanding of electricity are told. The human drama of the work with its triumphs and perplexities is there: Volta's detailed, persistent research, his inventions and his later exploitation of them, and the difficulty of wresting understanding from experimental results. The paradox of successful experiments designed from incorrect theory is conveyed. Illustrative material (scenes from Europe of

Volta's time, old pictures, and manuscripts) is interwoven with the experiments.

Volta's studies spanned a period of 25 years. We watch experiments with the electrophorus and the condensing electroscope, both invented by him. The decade-long studies with bimetallic conductors, set off by Galvani's discovery that they cause convulsions in frogs' legs, led to Volta's grouping of conductors into two classes: metals and passive conductors. (This sequence is partly animated, delightfully from Galvani's drawings, and partly acted, impassively by Devons himself.) Volta probed further; the frog legs are not a source of electricity but a sensitive detector which we see replaced by his condensing electroscope. Finally, as the synthesis of his long investigations, Volta invented the Pile. We watch one being built, and then through old pictures we are helped to appreciate the flood of applications that followed its gift of continuous electricity.

The experiments shown look simple though understanding them may not be. The film's intent (the commentary is explicit here) is not to explain in detail but to picture the stage on which the events took place. The construction is skillful; the presentation is ingenious and genuine. As a result the film can and, I hope, will be shown to many kinds of people, students or not, who are interested in science, history, people, and ideas. There can be pleasure and learning at any of its several levels.

Technically, the film is good. A few times the commentary is heard without visuals. This is more unusual than disturbing and should not deter the wide use the film deserves.

Judith Bregman is Associate Professor of Physics at the Polytechnic Institute of New York (Brooklyn). Her efforts in bringing to the physics community the films Symmetry and Aspects of Symmetry are well known. She has also contributed to improved physics teaching by participating in workshops of the Commission on College Physics and by serving on several working committees of the American Association of Physics Teachers.